INTERNATIONAL SPACE RESEARCH PARK™

DEVELOPMENT STUDY

FINAL REPORT

Prepared by Futron Corporation
In cooperation with Tatum CFO and
James Crouse, Consultant

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The Development Study required continuous collaboration, coordination, and teamwork from several departments of the Kennedy Space Center. The Study team extends a special thanks for the leadership and continuing support of the staff of KSC's Business Development Office. Specifically to Jan Heuser, Program Manager for SERPL and ISRP; Jim Ball, ISRP Project Manager and the Development Study leader; and Connie Milton, ISRP Technical Integration Manager. The team also recognizes the invaluable contributions of these fellow ISRP project team members representing various NASA offices at KSC: Mario Busacca, Bob Scoville, Don Schiller, Jose Perez-Morales, Renee' Ponik, and Leila Taylor.

The Development Study benefited considerably from continuous support and input of the Florida Space Authority and the cooperation of the U.S. Fish and Wildlife Service. Many thanks are given to Tim Franta of the Florida Space Authority and Ron Hight, manager of the Merritt Island National Wildlife Refuge, U.S. Fish and Wildlife Service. The team also acknowledges the important and lasting contributions of the ULI panel. Also, the team thanks the staff of Jones, Edmunds, and Associates for their contributions in refining the preliminary land use concept based upon the firm's environmental and storm water work performed under separate contract to FSA.

As part of the study, the team conducted interviews with nearly 100 candidate Park tenants. We would like to thank the many individuals who participated in these interviews. The team also visited the Central Florida Research Park; Sandia Science & Technology Park, in Albuquerque, New Mexico; and Cummings Research Park, in Huntsville, Alabama. The team extends sincere thanks to the staffs of these Parks for their hospitality, generosity with their time, and sharing of their knowledge and experience. A special word of appreciation goes to Joe Wallace, Executive Director of the Central Florida Research Park, for his encouragement and tremendous assistance.

Stephanie Roy, Futron Corporation
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STUDY OVERVIEW

Genesis of the Park Concept

In February 2001, NASA Kennedy Space Center (KSC) and the State of Florida agreed to a cooperative effort to design, construct, and operate a laboratory to handle the high volume of International Space Station (ISS) experiments expected to cycle through KSC over the next several decades. In recognition of its scientific potential, NASA and the State also agreed that a portion of laboratory resources would be available to Florida university researchers and their colleagues for ground-based investigations. As this laboratory became more defined, both NASA and the Florida Space Authority (FSA) recognized an opportunity to further leverage this new state-of-the-art facility. Named the Space Experiment Research and Processing Laboratory (SERPL), the project became identified as a core component of an invigorated research and development (R&D) presence at Cape Canaveral Spaceport

A research park, with SERPL as its magnet, would leverage the resources of the Spaceport to advance KSC's mission and enhance R&D capability in the State of Florida

As a center for R&D, SERPL will be an intellectual magnet for the region. The partners became convinced this draw could be harnessed to attract broader federal, state, and private investment in educational, R&D, and business opportunities requiring access to either SERPL itself or the extensive intellectual and physical resources at the Spaceport.

With SERPL as its magnet, a research park—on site at KSC—could provide the necessary base for both public and private parties interested in accessing and enhancing the broad capabilities of the Spaceport. Businesses, universities, and other federal programs could locate at the research park and enjoy a special relationship with the Spaceport, unique proximity to space launch and landing facilities, and access to world-class facilities and intellectual capital to further their R&D objectives. At the same time, KSC could benefit from the R&D taking place on its doorstep to advance KSC as a leading location for space-related research and technology development. These new partnerships with industry and academia could bring new infrastructure, new intellectual talent, and new approaches to advance KSC's growth as NASA's Spaceport Technology Center and help facilitate commercial use and development of the International Space Station.

To answer key questions about the strategic direction and general viability of a research park on site at KSC, NASA initiated a 12-month development study in May 2001.

The Development Study Team

The KSC Business Development Office led a project team that represented KSC, the U.S. Fish and Wildlife Service (USFWS), FSA, and a contractor team selected for its ability to answer key questions about the research park concept. Futron Corporation, a leading space market analysis firm, was brought on to lead the consultant team that also included: the internationally recognized Urban Land Institute; a highly respected business planning organization, Tatum CFO; and an experienced land use consultant with extensive history working with Cape Canaveral Spaceport, James Crouse. KSC tasked the consultant team to answer several core questions about the research park's viability:

The Development Study Team:

- ***KSC***
- ***FSA***
- ***USFWS***
- ***Futron Corporation***
- ***Tatum CFO***
- ***James Crouse, Consultant***

- Does a market exist for a research park on site at KSC?
- Can a feasible business model for a research park be constructed?
- Are there any insurmountable issues to the development of a research park on KSC property?

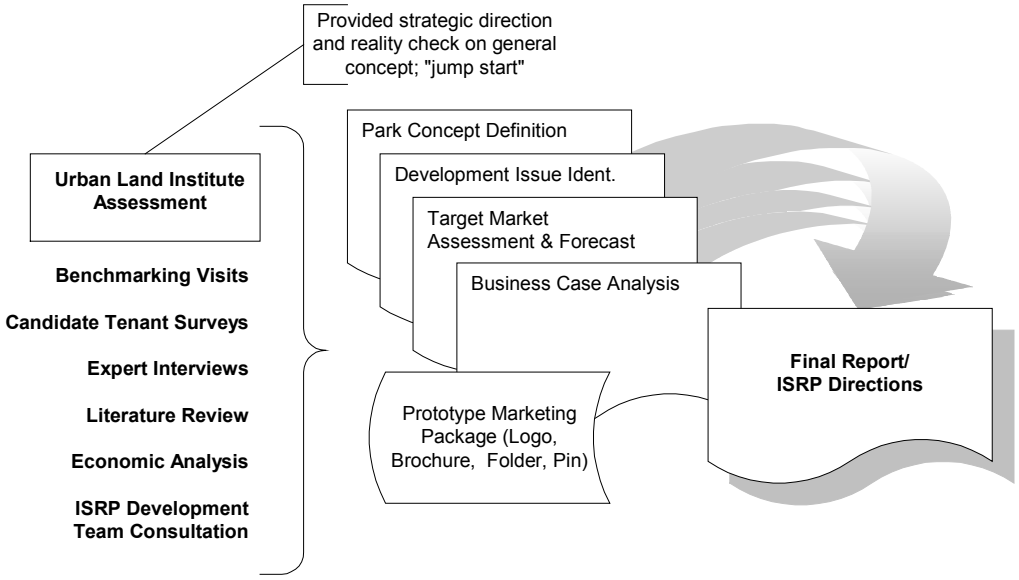
In addition, the consultant team was asked to:

- Help define the Park mission, goals, and objectives;
- Recommend appropriate roles for KSC and FSA in Park development and operations;
- Assess requirements for the Park from a land-use perspective;
- Assemble a prototype marketing package; and
- Advise on areas of marketing, financing, and operations.

Elements of the Development Study

To answer the key questions put to it, the consultant team delivered several core documents. Figure 1 illustrates the research and analysis activity, along with key deliverables, under the Development Study. This document, the *Development Study Final Report*, highlights the major findings of the study in its entirety.

FIGURE 1: ISRP DEVELOPMENT STUDY CORE DELIVERABLES AND ACTIVITIES[1]



Futron retained the Urban Land Institute (ULI) for a week-long, on-site assessment of the ISRP concept and requirements. ULI is an internationally recognized non-profit organization whose membership is composed of land development professionals. ULI regularly consults throughout the country on land development and urban renewal projects, for which its members volunteer their time. KSC's ULI panel was an interdisciplinary team that included several developers, a landscape architect, a planner, a market analyst, a finance expert, and others with the niche expertise needed to address this particular project. After an intensive 5-day workshop, which included approximately 40 interviews with KSC and related personnel, and extensive research on Brevard County and the surrounding region, the ULI team provided recommendations for successful development of the ISRP in a written report, entitled *Urban Land Institute Advisory Services Panel Report, Kennedy Space Center, Florida: A Strategy for the International Space Research Park.* The ULI report provided important strategic direction at the beginning of the project and a "reality check" on the Park concept and study approach. The panel found the Park to be a viable concept with important

[1] Outlined items represent physical deliverables.

implications for the economic health of the region. Key recommendations made by the panel and adopted immediately by KSC included:

- A name change from the working title of "Space Commerce Park" to the "International Space Research Park" (ISRP) to place appropriate emphasis on the anticipated R&D and international nature of the Park; and
- An overarching management and operational approach to the ISRP that involves a site-use agreement between NASA and FSA, with ongoing Park management a function of FSA or its designee.

Subsequent Development Study deliverables built on the ULI findings, often providing more detailed and quantitative analyses to supplement ULI's expert perspective. These deliverables refined the Park concept and development approach as the project matured. Study findings were based on quantitative economic forecasts, nearly 100 candidate tenant surveys, benchmarking visits to other parks, interviews with regional developers and business professionals, almost daily interactions with KSC and FSA project team staff, and other primary and secondary information sources.

- *Preliminary Park Concept and Development Schedule:* Defines Park vision, goals, and rationale; provides an initial conceptual land-use plan and phased development schedule for the Park; and includes recommendations for major Park infrastructure elements, parceling guidelines, surrounding land uses, and major Park environmental elements. This is a living document that can evolve as the Park concept matures.
- *Development Issues Report:* Reports on the most pressing and far-reaching physical, legal/regulatory, and operational challenges facing successful Park development; and characterizes each development issue by its risk to the project, identifies possible mitigation measures, and provides both raw and final scores for the issues.
- *Target Market Assessment and Forecast:* Defines the candidate tenant profile and associated requirements; recommends key marketing approaches; provides near-term and long-term forecasts of the square footage absorption for the Park; and estimates economic impacts of the Park's development on the local, regional, and statewide economies.
- *Business Case Analysis*: Provides a microeconomic business model for the ISRP, including pessimistic, baseline, and optimistic cash flows, returns on investment, and costs for infrastructure for the ISRP; and documents strengths and weaknesses of the business model, marketing recommendations, management structure recommendations, funding sources, and financial projections.
- *Prototype Marketing Package*: Provides an initial marketing tool for ISRP management; and includes a Park logo (currently undergoing trademark and copyright protection by NASA), overview presentation, folder, and lapel pin.

THE PARK VISION

The International Space Research Park™ (ISRP) is a unique opportunity for KSC and the State of Florida to address complementary objectives in R&D strength, mission enhancement, public-private partnership opportunities, and space commercialization and development. As a center for R&D, the Park will bring together a dynamic mix of industry, academia, and government researchers to focus their combined strengths in areas such as spaceport technology, energy research, ecological sciences, fundamental biology, and other high tech industries that have intersecting requirements with the Spaceport. The ISRP will accommodate burgeoning KSC mission requirements, such as International Space Station (ISS) payload servicing and spaceport technology advancement while providing a dynamic environment for research, education, and technology development to enhance the intellectual and economic status of the State of Florida.

As equity partners in the Park, NASA and FSA envision:

> *...a 400-acre, campus-like and ecologically friendly research park with a balanced mix of academic and commercial tenants, contributing in concert to the State of Florida's intellectual capital, the position of Cape Canaveral Spaceport as the world leader in spaceport technology, and the development and commercialization of space...*

NASA and KSC envision a phased development for the Park, whereby infrastructure investments are made on an as-needed or phased basis. The tenant mix should be a balanced representation across industries, academia, and government organizations. The partners want to create an environment that reflects the emphasis on R&D in the Park and maximizes interaction amongst tenants and between the tenants and the Spaceport.

The Proposed Park Site

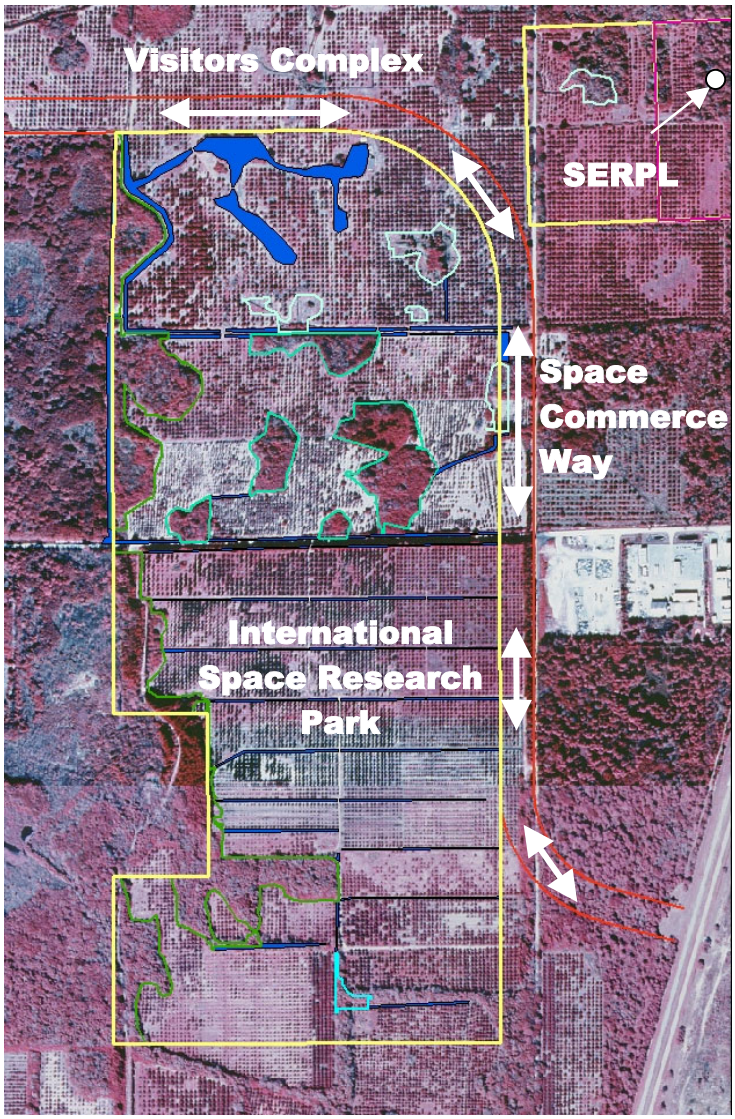
The proposed ISRP site was determined using a number of requirements and factors, some of which were in apparent competition with each other:

- SERPL's requirement for a secure environment;
- The Park's more general requirement for unfettered public access;
- Environmental impact considerations; and
- Integration into the transportation and other infrastructure provisions of the Spaceport.

A need to be close to launch and landing operations and elevated security considerations required that the SERPL be sited inside the KSC secure perimeter. However, for the Park to realize its full potential, it needs to function more as a commercial concern, allowing unfettered access to the fullest possible extent 365 days a year.

To meet these competing requirements, the SERPL and proposed ISRP sites are co-located just to the south and east of the Visitors Complex. A new roadway, Space Commerce Way, will connect the NASA Causeway with State Route #3 by turning off the Causeway just before the Visitors Complex and intersecting Route #3 south of Ransom Road. To the east of Space Commerce Way, SERPL will be within the newly designated secured perimeter for KSC, while to the west of the road, the rest of the ISRP would enjoy 24-hour public access. Figure 2 provides an aerial view of the ISRP site. The yellow outline indicates Park boundaries; the red indicates Space Commerce Way; shades of green and blue surround wetlands of varying quality.

Figure 2: Aerial View of Park Site



It's believed that locating to the south and east of the Visitors Complex will also allow the Park to minimize its impact on the local environment. This will be evaluated in Environmental Impact studies. The majority of the sited location is already disturbed, being comprised primarily of standing orange groves that are mostly economically unproductive. Moreover, at the intersection of the Causeway and Route #3, the site is at the heart of the Spaceport's transportation system and is well situated to tap into other infrastructure elements. The ISRP site is also less than a mile from the KSC industrial complex, the key center of activity on the Spaceport.

Citrus groves, surface drainage, KSC tourism, and lines-of-sight issues are the most significant property constraints affecting the ISRP, all of which are addressable by reasonable means. The U.S. Fish and Wildlife Service (USFWS) has citrus production agreements with local growers and citrus research agreements with the Kerr Center for Sustainable Agriculture. Proposed phasing of land withdrawal for development through 2008 readily accommodates these agreements. At only 5 to 6 feet above sea level, the site requires significant amounts of fill material for building construction and must encompass an extensive storm water management system. Combined Park growth and increasing tourist traffic to and from the KSC Visitors Complex pose congestion concerns over the long term. A Spaceport Master Planning effort is already underway that includes a regional transportation system that should accommodate the dual requirements of the Park and the tourism trade. Finally, the Spaceflight Tracking and Data Network Station (STDN), a NASA tracking facility that maintains critical instrumentation lines-of-sight (LOS) to space vehicles, constrains building height on certain parcels of land. The STDN requirements can be readily accommodated through careful mapping of these LOS and by imposing appropriate building height and interference restrictions.

The Preliminary Development Plan

Conceptual Land Use Plan for the Park

The ISRP offers an opportunity to establish a new paradigm for research park design, while still maintaining a cost-effective infrastructure system. In keeping with the goals and objectives above, the Conceptual Land Use Plan for the Park follows general guidelines such as generous parcel size, central and open green space, and underground utility recommendations. Moreover, the site layout is designed to be a physical manifestation of the close ties between academic research and government and industry applied R&D.

The Conceptual Land Use Plan (Figure 3) illustrates an abstract view of the ISRP at build out. Actual lot designations will reflect tenant and ISRP management requirements as the Park matures.

Full accessibility to all areas of the ISRP site is a guiding requirement, as well as full conformance to the evolving Cape Canaveral Spaceport Comprehensive Master Plan. Curved, open roads access all sections of the Park while contributing to the high-class look and feel of the development. It is the intent of the ISRP land-use plan to serve as an Area Development Plan for the Cape Canaveral Spaceport Comprehensive Master Plan. Finally, the Conceptual Land Use Plan is designed to honor existing land use agreements to the fullest possible extent.

The Park layout is designed to promote personal interaction among tenants and the sharing of ideas. A central greenway preserves wetlands while serving as a main route for pedestrian walkways; such walkways will also be incorporated east west across the Park. The greenway will enhance the campus-style feel of the Park.

Figure 3: Conceptual Land Use Plan

The parcels closest to SERPL have been designated for a university cluster. This location will bring academic researchers closer to government and other university R&D happening in SERPL. The option of some sort of physical connection through the security perimeter between the Park and SERPL at this northeast corner is maintained for future consideration.

Business services will be located on the Park site to offer tenants easy access to retail amenities, such as copying, dry cleaning, and food services. All Park tenants will have access to these services, and by using common services, they will have opportunities to meet each other and find out what others are working on in the Park.

In order to promote practical environmental stewardship, the Park is designed to preserve the surrounding wetlands and wildlife habitats to the furthest possible extent. The Conceptual Land Use Plan attempts to identify and accommodate many of the existing bodies of water and wetlands internal to the ISRP through the use of a "central park" green corridor traversing the ISRP site from north to south. The central greenway offers substantial grass, trees, and other native foliage for shade and decorative function. The greenway will preserve and improve environmentally sensitive areas, making them an asset to the development. Several ponds and other water areas are dispersed throughout the site, serving both form and function purposes. The water areas will be a part of the water drainage system and will also beautify the Park. Plot sizes are varied rather than standard and have irregular property lines to accommodate the surrounding wetlands.

Design and Infrastructure Considerations

The recommended architectural and landscaping designs further the goal of creating a campus-style, R&D environment. ISRP management will have final approval over all building and landscaping designs and will issue standards for tenant reference. All lots will be developed consistent with the character of class "A" office and laboratory space with a modern architectural style that fits in with that of the local area. Landscaping will incorporate native plant species, creating a natural wildlife habitat where practical and safe; low maintenance landscaping will be encouraged and recycled water irrigation systems will be required.

Design standards will ensure a uniform, high-class feel throughout the Park, while promoting good environmental stewardship

Landscaping guidelines will include areas in and around the Park, such as building entranceways, parking lot islands, picnic areas, trails, patios, and other possible seating areas such as plazas or courtyards.

Green space requirements on individual lots will involve a level of flexibility in order to accommodate the realities of particular parcels already significantly impacted by preserved wetlands and storm water retention areas.

The ISRP is distinct from other KSC operations insomuch as it will operate independently from traditional NASA programs and activities; its facilities and operation will be commercial in nature.

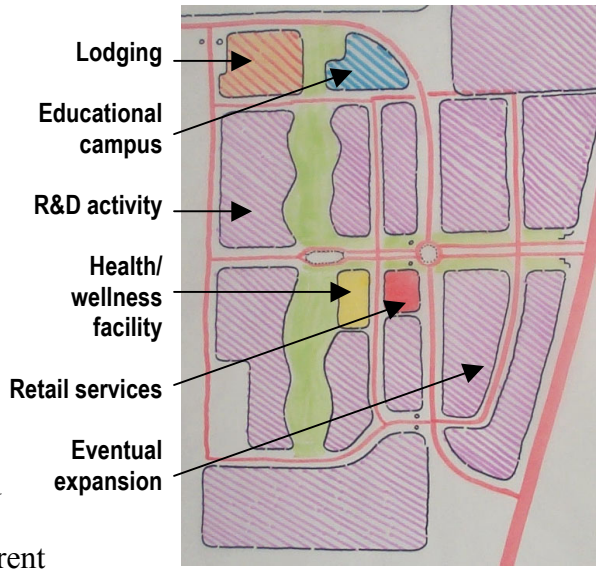
The operation of the ISRP as a quasi-independent entity merits the provision of infrastructure and support services (emergency response, waste management, security) in a traditional commercial manner that is both familiar and affordable to Park tenants. The performance of such services should be transferred to either a local municipality or other non-federal entity as designated by the equity partners (NASA and FSA).

Comparison to 2001 Urban Land Institute Recommendations

The current development plan and the original plan recommended by ULI follow the same overarching tenets. Both recommend a 20-year, phased development schedule; both recommend an academic presence and retail space in addition to the R&D tenants; and both have a central greenway and centralized pedestrian paths meant to encourage interaction. The size and shape of the greenway and the pedestrian paths have changed to improve traffic flows and to accommodate larger wetland and storm water retention areas, the need for which has been indicated from a more thorough survey of the Park site.[2] The roads for vehicular traffic through the Park generally follow the same routes, but they have been curved to make the area more attractive, to promote slower traffic, and to support the vision of a campus-style environment.

Some adjustments have been made to the placement of certain types of space. The overall look and feel of the Park has been modified to be less structured than the ULI plan, which advanced maximum usage of developable land. The parcels of land are now divided up into fewer, larger zones rather than into standard-sized lots. The varied zone sizes are intended to allow more flexibility to accommodate the differing space needs of tenants. As in the ULI plan, a portion of the Park space in the southeast quadrant remains designated for business services and retail. The current plan no longer calls out a specific location for health/wellness services as the ULI plan originally indicated.

FIGURE 4: ULI PROPOSED MASTER PLAN, BY TYPE OF SPACE



Also, ULI originally assumed the availability of land on the SERPL side of the security perimeter for an expansion of Park academic facilities. In light of current security concerns, the current plan accommodates all university presence west of Space Commerce Way. Finally, a portion of the Park that ULI had designated for lodging facilities has been removed from the plan due to security concerns and a consensus that these needs can be best accommodated outside of KSC grounds.

[2] Jones, Edmunds, and Associates was retained by FSA to develop a comprehensive storm water management plan for the site. At the time of this writing, a thorough site survey had been completed, wetlands had been mapped, and preliminary storm water management requirements indicated the pond and greenway structure as shown in the Conceptual Land Use Plan, above.

Proposed Development Schedule

A 20-year, phased approach to Park development is recommended to accommodate immediate space needs, existing land-use agreements, gradual infrastructure investment, and flexible long-term growth. Jones Edmunds & Associates proposes five phases, designated Phase A through Phase E, to allow the ISRP to lay infrastructure in a step-wise approach that capitalizes on existing access points to the property and a zoned approach to storm water management (see Figure 5). NASA proposes to withdraw land from USFWS management in accordance with these phases as required for development by the ISRP. It is anticipated that each successive phase will commence when its predecessor is 75 percent built-out and occupied.

Several recommended interim studies, such as hydrology, storm water management, and environmental studies, have either already began or will occur in the next 2 years. Other activities to set into place various legal and regulatory environments necessary for development have also begun. In particular, an Environmental Assessment (EA) process has begun for Phase A of the Park; this will facilitate early Park entry for prospective tenants who have expressed an immediate need to be on site. Figure 6 outlines the schedule targets for near term tasks on which the ISRP project team is concentrating.

FIGURE 5: PROPOSED PHASING

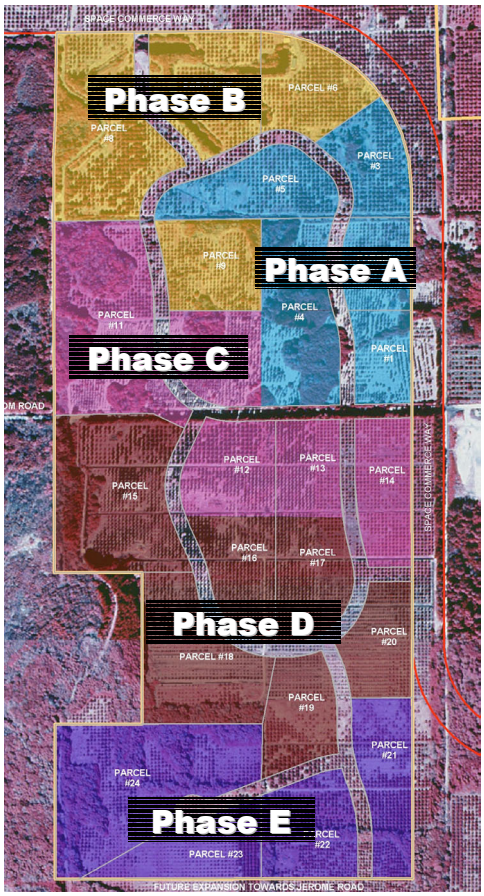
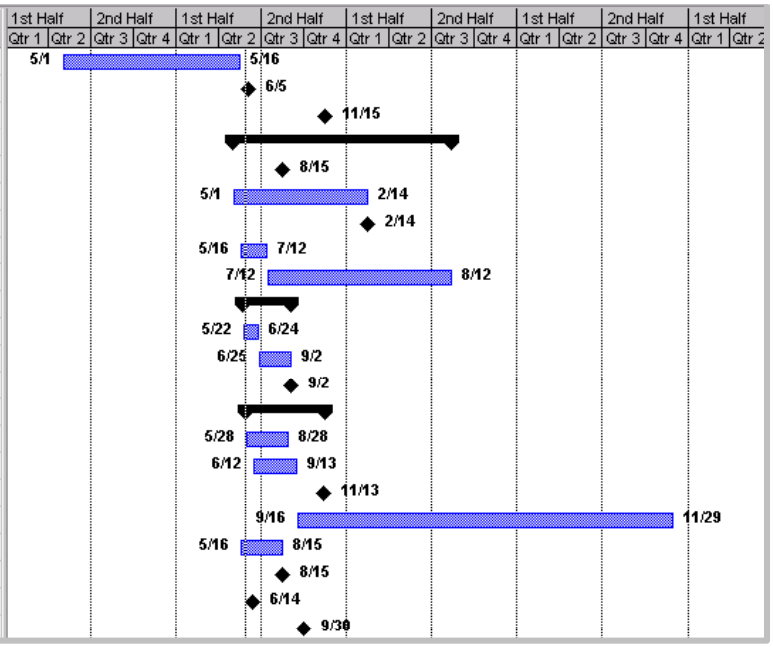


FIGURE 6: NEAR-TERM TARGET SCHEDULE FOR ISRP IMPLEMENTATION

Task Name	Start	Finish
Concept Development	Tue 5/1/01	Thu 5/16/02
Ctr Mgmt Brief/Decisions	Wed 6/5/02	Wed 6/5/02
Bond Issue/Proj. Finance	Fri 11/15/02	Fri 11/15/02
ENVIRONMENTAL	**Wed 5/1/02**	**Tue 8/12/03**
CD Signs EA FONSI	Thu 8/15/02	Thu 8/15/02
Stormwater design/permiting	Wed 5/1/02	Fri 2/14/03
SJRWMD Issues Permit Phase A	Fri 2/14/03	Fri 2/14/03
EIS procurement	Thu 5/16/02	Fri 7/12/02
EIS Process (13 mth)	Fri 7/12/02	Tue 8/12/03
LAND USE AGREEMENT	**Wed 5/22/02**	**Mon 9/2/02**
Final FSA/KSC Review	Wed 5/22/02	Mon 6/24/02
LUA HQ Review/Approval	Tue 6/25/02	Mon 9/2/02
Use Permit Signed	Mon 9/2/02	Mon 9/2/02
ISRP MASTER PARK PLAN	**Tue 5/28/02**	**Wed 11/13/02**
Standards/Code Devlp	Tue 5/28/02	Wed 8/28/02
Utility standards dev	Wed 6/12/02	Fri 9/13/02
Plan complete/published	Wed 11/13/02	Wed 11/13/02
PHASE A INFRASTRCT	Mon 9/16/02	Mon 11/29/04
Dev. ISRP Entity/Board	Thu 5/16/02	Thu 8/15/02
Initial ISRP Board Mtg	Thu 8/15/02	Thu 8/15/02
Draft Use Guidelines, CBD	Fri 6/14/02	Fri 6/14/02
Final Use Guidelines, CBD	Mon 9/30/02	Mon 9/30/02



THE MARKET

Conditions and Trends

As the nation's premier space launch and landing facility, Cape Canaveral Spaceport offers opportunities not available elsewhere in the United States and only partially found in the rest of the world. The environment, personnel, and facilities at Cape Canaveral Spaceport combine to make the ISRP a unique location for R&D, technology education, and space business development activities.

Kennedy Space Center will continue to be an active center for space launch and related activities over the next 20 years. However, several key trends in the aerospace industry—both government and commercial—have a direct impact on the ISRP's prospects and should influence the Park's strategy:

- Expanding capabilities of the International Space Station to support research;
- Stagnant government space budgets around the world;
- Flat projections for commercial space launch services;
- A shift away from operational activities within NASA and the Department of Defense; and
- The recognition of a distinct research mission for KSC in spaceport technology.

In recognition of the current environment, KSC and other space centers have begun to focus more externally, searching for opportunities to leverage their relationships with commercial, academic, and other government partners, both in the aerospace industry and in other high-tech sectors. The formation of the ISRP reflects this shift in focus.

The aerospace industry represents decades of technological investment that has application across a variety of industries and research areas. Similarly, investment in other industries may fit existing and pending mission requirements for the space sector. The ISRP is an opportunity to encourage this type of cross-fertilization by bringing together R&D interests across a range of industries whose requirements may intersect those of the Spaceport.

In contrast to the aerospace industry, other high-tech sectors continue to experience significant growth in both Florida and the nation. Some of these sectors are especially resistant to recessionary pressures, and others represent areas of advancement applicable across a broad swatch of related industries, including aerospace. The Central Florida region is especially strong in several high-tech clusters that should continue to be bolstered by initiatives, such as Governor Bush's Technology Development Initiative, a proposal for $100 million dollars to fund high-tech Centers of Excellence at Florida universities in fields such as biotechnology, information technology, and simulation. (On May 22, 2002, Gov. Bush signed into law a $30 million State appropriation for this year's budget. The specific fields and actual centers have yet to be selected.)

Positioning for Success

Successful research parks established in the 1990s have been in communities that have distinct strengths in identifiable industry clusters. Towards this end, and in recognition of the relatively flat forecast for aerospace amidst a general forecast of high-tech growth, the Park's target tenant pool should mirror the high-tech strengths of the region, even while it draws most heavily on the strength nearest the Park—aerospace. The Central Florida region is especially strong in several sectors that directly intersect with the technology and mission requirements of space flight. These sectors include:

- Aviation and aerospace;
- Information technology;
- Microelectronics;
- Modeling, simulation, and training; and
- Optics and photonics.

In addition, KSC offers unique competencies and opportunities to a number of research fields not as well represented commercially in the region. These include:

- Biotechnology,
- Ecological sciences, and
- Energy sciences.

The ISRP's best opportunity for success lies in a marketing effort that targets organizations in regional tech clusters that are engaged in dual-use technology development or licensing activity. A diverse tenant base that cuts across industries and reflects the diversity of the broader Central Florida region will prove less affected by cyclical downturns and programmatic changes. In addition to a diverse tenant base, the success of the ISRP can be best facilitated if the ISRP:

- Establishes inclusive criteria that encourage desirable types of activity,
- Seeks a high-quality academic presence,
- Encourages high-tech incubator activity at the ISRP,
- Ensures the availability of multi-tenant space,
- Integrates ISRP marketing with regional tech marketing activity, and
- Provides a high-level of service to early tenants. Future prospective tenants will want to know from these organizations about their experience in the Park.

Market Prospects and Forecast

With effective Park leadership and highly reasonable improvements in state and regional shares of national R&D expenditures, the ***ISRP can expect to achieve full build-out at reasonable densities over a 20-year time frame.*** After meeting pent-up demand requirements, the ISRP's period of most rapid growth should come between 2008 and 2014. This period corresponds with Phase II of ISRP development and the opening up of ISRP property south of Ransom Road for build-out. Under the baseline forecast, the ISRP will absorb more than ***2.1 million square feet*** of R&D and related space. Figure 7 illustrates the Park absorption forecasts for the baseline, pessimistic, and optimistic scenarios.

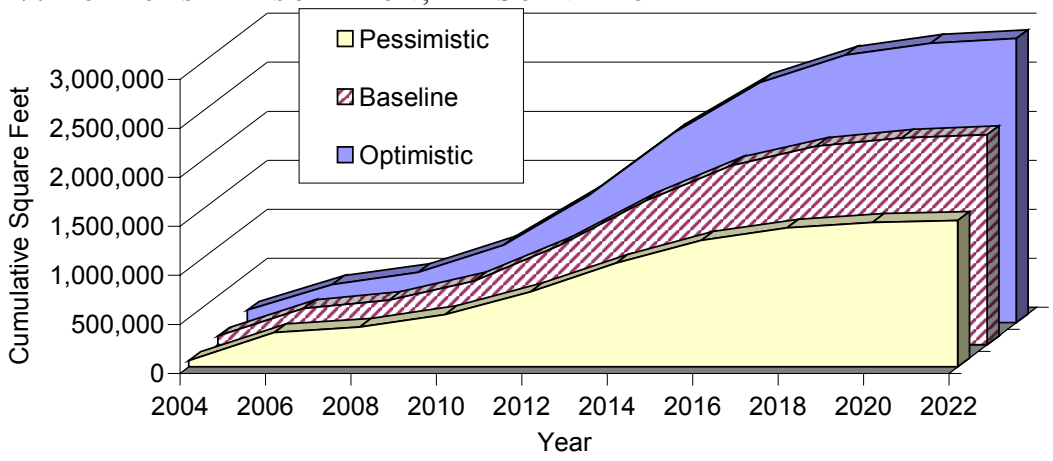
With assertive management and marketing, the ISRP can expect to reach capacity within the Park's 20-year development period

To assess the ISRP's opportunity for success, Futron analyzed historical trends in R&D expenditure patterns and assessed the competitive position of Florida and Brevard County in high-tech industries and R&D capacity. Through discussions with economic development leaders throughout Central Florida, Futron considered the policies and programs in place to attract high-tech activity and bolster R&D capability. Futron then combined trend analysis with forward-looking indices to forecast future performance. Early years of Park demand were supplemented with square-footage requirements revealed from the nearly 100 candidate tenant interviews Futron performed, which indicate pent-up demand for the ISRP.

Inherent in the forecasts is an assumption of negligible total growth in NASA expenditures in the region, which is consistent with current national policy and spending patterns. However, in the out-years, a greater proportion of new KSC expenditures are represented as R&D activity, consistent with the evolving KSC mission. Futron varied key assumptions, such as the effectiveness of Florida in capturing a representative R&D share and the ability of ISRP management to capture a proportion of new regional R&D, to produce pessimistic, baseline, and optimistic scenarios of Park market performance. Futron then overlaid a diffusion model to represent slower absorption in early years of Park development, followed by more rapid absorption as knowledge about the Park and its benefits become more widespread (modifying a linear projection into an s-curve market forecast). The baseline results represent Futron's best projections for actual performance.

Since this assessment looks at *capturing a share of future R&D increases* in funding, the forecast does not include demand for Park space that might arise because of a transfer of existing R&D programming from another state by the federal government, out-of-state universities, or companies. Should such demand arise, it may supplement or replace the demand forecast here, subject to ISRP management tenant admittance decisions.

FIGURE 7: FORECAST ABSORPTION, BY SCENARIO



	2004	*2006*	*2008*	*2010*	*2012*	*2014*	*2016*	*2018*	*2020*	*2022*
Optimistic ft^2	128,058	391,465	513,053	791,430	1,301,113	1,940,893	2,450,576	2,728,953	2,850,541	2,898,410
Optimistic linear ft^2	202,494	726,945	941,375	1,185,373	1,433,041	1,667,255	1,930,660	2,226,132	2,556,874	2,927,111
Baseline ft^2	87,120	369,090	455,148	652,179	1,012,925	1,465,751	1,826,497	2,023,528	2,109,586	2,143,467
Baseline linear ft^2	133,941	586,993	727,194	884,891	1,042,484	1,218,879	1,416,960	1,638,807	1,886,737	2,163,781
Pessimistic ft^2	63,006	349,856	405,371	532,474	765,189	1,057,304	1,290,018	1,417,121	1,472,637	1,494,493
Pessimistic linear ft^2	98,445	512,394	609,169	716,659	818,155	930,053	1,053,980	1,190,809	1,341,516	1,507,597

	2004	*2006*	*2008*	*2010*	*2012*	*2014*	*2016*	*2018*	*2020*	*2022*
Optimistic employment	457	1,398	1,832	2,827	4,647	6,932	8,752	9,746	10,181	10,351
Optimistic linear employment	723	2,596	3,362	4,233	5,118	5,954	6,895	7,950	9,132	10,454
Baseline employment	311	1,318	1,626	2,329	3,618	5,235	6,523	7,227	7,534	7,655
Baseline linear employment	478	2,096	2,597	3,160	3,723	4,353	5,061	5,853	6,738	7,728
Pessimistic employment	225	1,249	1,448	1,902	2,733	3,776	4,607	5,061	5,259	5,337
Pessimistic linear employment	352	1,830	2,176	2,559	2,922	3,322	3,764	4,253	4,791	5,384

THE BUSINESS CASE

Economic Feasibility

The ISRP is an economically viable project, and it will have benefits to the equity partners (NASA and FSA) that appear to well outweigh its risks. KSC and FSA can expect the Park's cumulative cash flow to turn positive in the second decade of ISRP development. Because of this, the model presumes the use of financing options for Park infrastructure investment that use patient, long-term capital. A conservative, pay-as-you go approach appears feasible and a phased development is highly recommended. The model detailed in the *Business Case Analysis* constructs scenarios around the baseline, optimistic, and pessimistic forecasts of the market assessment. In all cases, when viewed from the perspective of its gross impact on the region and benefit to NASA's and Florida's strategic objectives, the ISRP is a desirable investment. Financiers and site developers can expect to capture a reasonable return on their investment. With the potential to increase high-tech business activities in Brevard County, the Park will also stimulate additional economic activity in the East Central Florida region and throughout the state.

In the baseline scenario, estimated economic rewards of the ISRP by 2022 include:

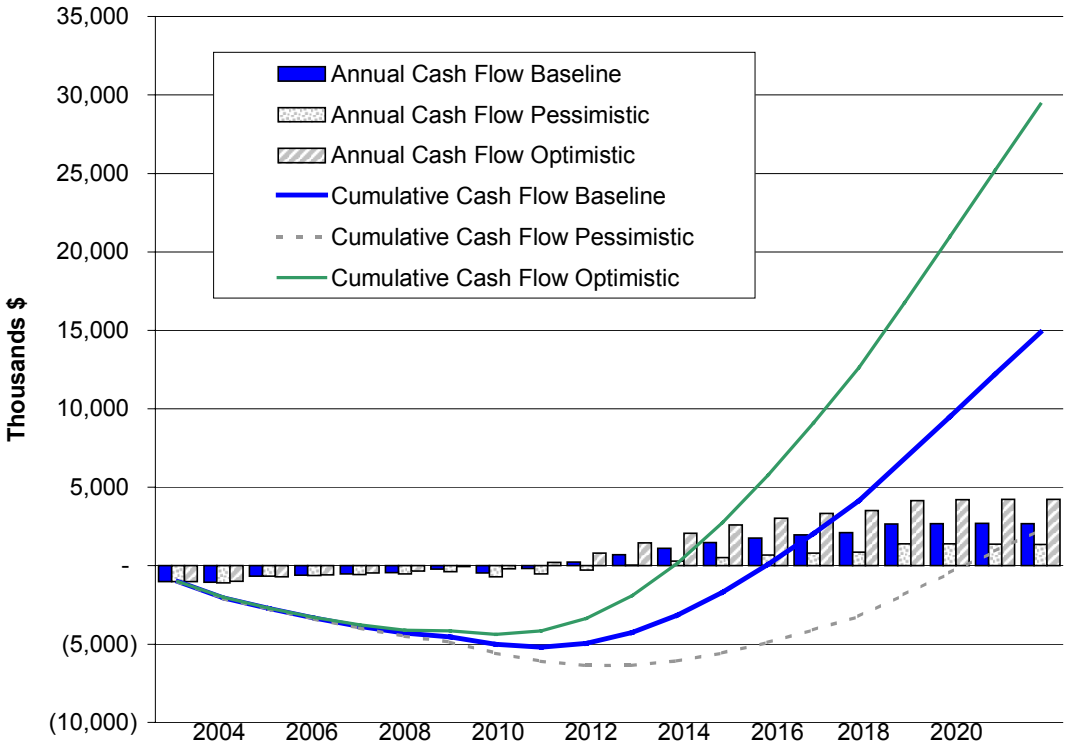
- 2.2 million square feet of developed space;
- 8,000 jobs in the Park;
- $57 million of annual lease revenue to the site developers; and
- $6.6 million of annual revenue to the Park developer.

The business model generalizes infrastructure investment in the Park over two periods: initial Park infrastructure development, beginning in 2003, and follow-up infrastructure build-out, beginning in 2010. The Park infrastructure cost for initial build-out (years 2003 to 2009) is estimated to be $9.2 million. Follow-up build-out, starting in 2010, is estimated to require an additional $5.1 million investment. The model projects site developers will spend more than $524 million on individual facilities over a twenty-year period.

For the developers of individual sites within the ISRP, breakeven lease rates are estimated at just over $17 per square foot (based on building square feet, charged annually). Office and laboratory lease rates will have to be in the $20 to $22 range in order to return investment to the Park developer. While higher than the current prevailing local pricing for lease properties, these rates appear attainable as they are comparable to similar properties in the Orlando and Tampa markets.

Figure 8 illustrates the annual and cumulative cash flow to the Park developer; note that in the baseline scenario, annual cash flow turns positive in 2012, while cumulative net cash flow over the 20-year development cycle is just under $15 million.

FIGURE 8: PARK DEVELOPER'S ANNUAL AND CUMULATIVE CASH FLOWS



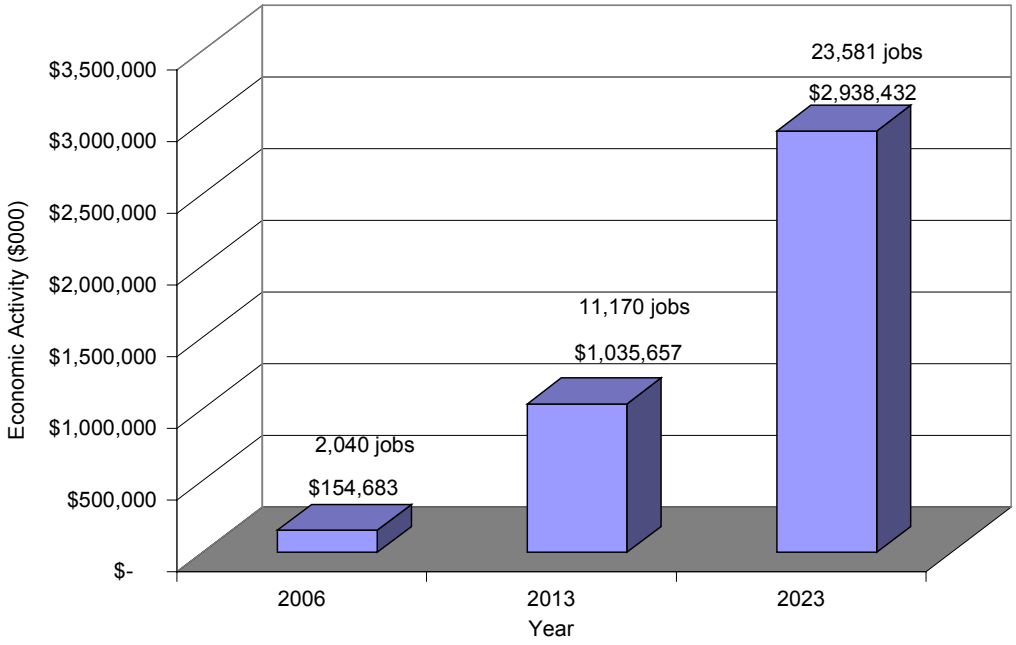
Economic Impact

Futron used the Regional Input-Output Modeling System II (RIMS II), developed by the U.S. Department of Commerce, to calculate the anticipated economic impacts of the ISRP on Brevard County, East Central Florida, and State of Florida regions. Economic impacts refer to the goods and services produced directly by Park activities, including computer and data processing services; engineering, architectural, and surveying services; research, development, and testing services; university education and technical training; and all other industry groups that are affected directly and indirectly by those industries. While the entire state will experience increased economic activity, higher earnings, and more jobs, Brevard County will realize the greatest share of the economic benefits that will result from construction and operations of the Park.

Economic impacts were calculated for the first 5 years of construction and for years 3, 10, and 20 of Park operations. Construction of roads, utilities infrastructure, and building space could bring an estimated $70 million of additional economic activity to Brevard County and a total of about $90 million of economic activity for the State of Florida through year five of Park build-out. ISRP-related construction will also create nearly 700 new jobs for Brevard County and more than 900 total new jobs for the State of Florida.

The demand for the final goods and services offered by ISRP tenants will generate about $119 million of additional economic activity and about 1,500 new jobs in Brevard County in 2006. For East Central Florida and the State as a whole, Park activity will generate $150 million and $154 million of economic activity, respectively. The total estimated impacts on economic activity and jobs created by business activities at the ISRP for the State of Florida are summarized in Figure 9. Assuming organizations experience a 1-year lag time between committing to locating in the Park and beginning operations, snapshots of the impacts are shown for 3, 10, and 20 years.

FIGURE 9: ESTIMATED IMPACTS OF THE ISRP ON ECONOMIC ACTIVITY AND JOBS FOR THE STATE OF FLORIDA, BY YEAR OF REALIZATION[3]



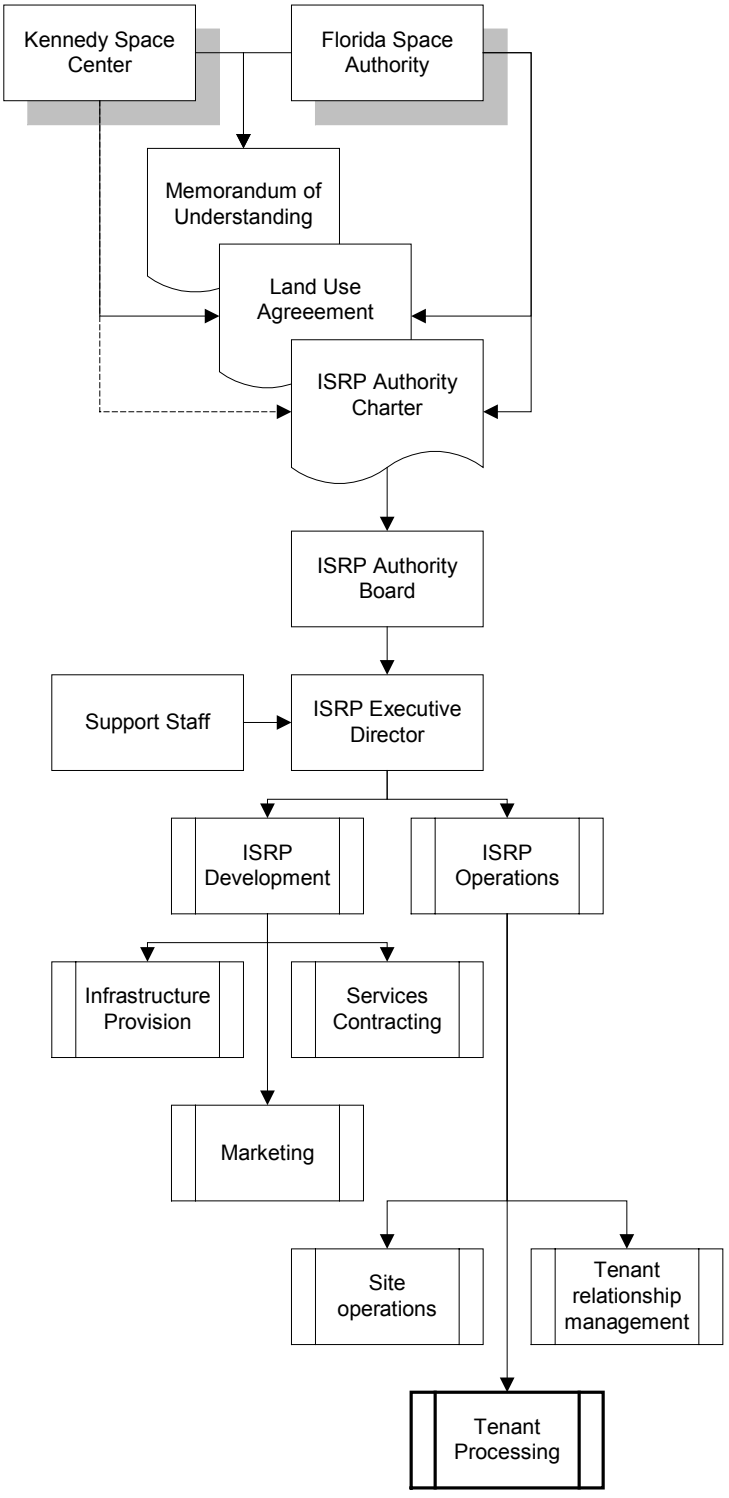
[3] Due to the 1-year lag time, impacts for years 3, 10, and 20 would be realized in years 2006, 2013, and 2023, respectively.

PARK MANAGEMENT

KSC and FSA signed an initial Memorandum of Understanding (MOU) in December 2001, defining their respective roles and responsibilities in planning the ISRP, and establishing guiding principles and understandings laying the foundation for future land use and management agreements. As currently proposed, and subject to required approvals, NASA envisions conveying the use of the proposed ISRP site to the State of Florida, which in turn will use FSA's existing statutory authority to establish an independent entity to manage the ISRP. Following up on this Development Study, which was funded by NASA, it is planned that FSA finance additional environmental, legal, and technical studies necessary to prepare for implementation of the park. It is also anticipated that FSA will facilitate the funding of the infrastructure investments necessary to bring the Park to fruition. KSC will continue to have an active role in the Park as the landowner, key stakeholder, business development partner, technical consultant, final tenant approval authority, and liaison between Park tenants and Spaceport resources. Figure 10 shows an overview of the ISRP structure.

NASA and FSA are in the process of authoring and obtaining approval for a Land-Use and Management Agreement between NASA and FSA for the ISRP. A minimum term of 50 years, with extension options, is highly recommended in order to make the Park an attractive option for business interests. A use term of this length is not unprecedented; a developer was recently granted a 50-year use agreement on federal land adjacent to Los Alamos National Laboratory in New Mexico. NASA will withdraw ISRP land from USFWS management in five stages, consistent with the development-phasing schedule detailed previously in this report.

FIGURE 10: ISRP PROPOSED STRUCTURE



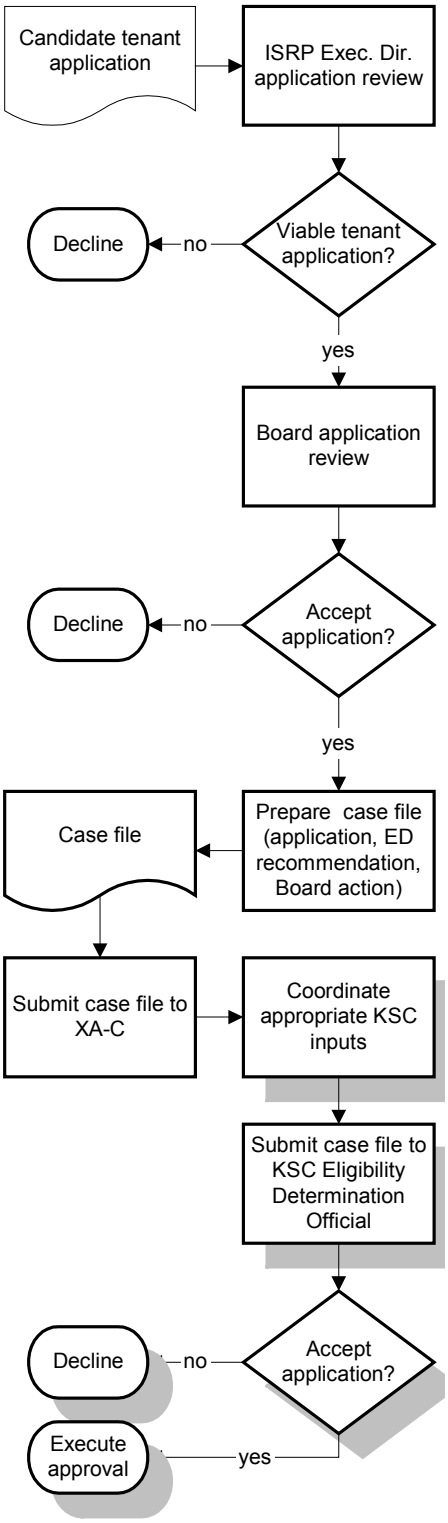
The proposed independent entity to be created under FSA authority will be named the "International Space Research Park Authority." It is envisioned that this authority will be governed by a seven person Board of Directors (ISRP Authority Board), each serving a term of three years except for the chairperson who would serve for two years. To maintain a balance of the interests of the two public partners, KSC and FSA will each appoint three Board members, while the Chair appointment will alternate between the partners.

It is planned that the ISRP Authority Board will have full responsibility for the development and operation of the Park, and will be expected to contract for outside services as necessary. The Board's specific responsibilities will be to:

- Manage both the Park real estate and infrastructure improvements;
- Design, construct, and operate infrastructure and facilities defined as necessary or desirable by mutual agreement of the parties;
- Interview, select, and contract with a full-time professional manager (the ISRP Executive Director) to successfully lead the Park's initial years of development, sales, and operations;
- Market, lease, and service ISRP sites to qualified tenants;
- Establish pricing for leases and services;
- Contract for services on behalf of the ISRP and its tenants;
- Take action against tenants in default or any other parties if required;
- Authorize and approve contracts;
- Establish ISRP policies; and
- Otherwise perform the business and management functions required for the ISRP to successfully develop and operate.

NASA will retain the authority to approve, disapprove, or approve subject to conditions all uses and users in the Park. After reviewing a candidate tenant application, if the ISRP Authority Board finds in favor of the application,

FIGURE 11: PROPOSED TENANT PROCESSING



then the Board will prepare a case file on the tenant, including information on the type of use envisioned for the Park and the Board's recommended course of action. No submission to NASA is required if the Board decides to decline the application themselves. The KSC Center Director, acting as the KSC eligibility determination official, will have the authority to accept or decline any application forwarded by the ISRP Authority Board. See Figure 11 for an overview of ISRP tenant processing.

KEY LESSONS LEARNED

Throughout the course of the Development Study, the project team actively sought the guidance and direction of experts. Benchmarking visits to other, successful research parks around the country were a key source of lessons learned that have been incorporated into the ISRP.

The project team held discussions with research park managers around the country, sought the advice of the Association of University Related Research Parks, and ultimately visited, in person, three research parks that, for a variety of reasons, were relevant to the ISRP:

- Central Florida Research Park, adjacent to the University of Central Florida outside of Orlando, Florida;
- Sandia Science and Technology Park (SS&TP), adjacent to Sandia National Laboratories in Albuquerque, New Mexico; and
- Cummings Research Park (CRP), adjacent to Redstone Arsenal and NASA Marshall Space Flight Center in Huntsville, Alabama.

No two research parks are exactly alike. Each park has its own set of circumstances, its own look and feel, and various advantages and disadvantages for potential tenants. Nevertheless, there are consistent practices that can encourage success, and some realities that seemed universal for effective research park development, management, and operations.

Research parks are not independent business ventures. Typically, they are investments by communities in the intellectual and technological infrastructure of their region. Therefore, a park's success is measured more by its total impact on a community than by the park balance sheet. Investors expecting a quick return are often disappointed, since a park can take several decades to develop to its full potential.

The health of the regional high-tech economy is a key indicator of a research park's prospects. Close affiliations with regional technology businesses, including trade organizations and local economic development efforts, can amplify a park's marketing efforts. At the same time, research parks tend to grow in surges that do not necessarily correlate with national economic cycles. A quick take-off is often followed by a lull, with absorption finally accelerating as the market perceives that the park approaching a critical mass.

In addition, research parks typically grow from the "inside out;" initial tenants tend to be local, homegrown firms. Over time, tenants came to the research parks from more distant locations within the state, and then from outside the state. Fully developed parks tend to have approximately 80 percent of their businesses from within the state and 20 percent from out-of-state. Because of the bias toward smaller, local firms, research parks with immediately available multi-tenant space do better in meeting market demand and posting steady absorption rates than parks that only sell or lease to owner/occupants that construct their own building.

Each research park has its own unique history and management system. Research parks may have a management organization that is solely responsible for the research park, or the entity may manage the research park among other responsibilities. Successful research parks started in the last two decades have been master-planned. Allowing tenants with immediate needs for space to enter the park before a master plan is approved can keep the momentum going for development; however, allowing tenants to enter a park before a master plan is approved can also make it more difficult to get future tenants to conform to uniform standards and procedures.

Regular interaction with tenants via monthly newsletters, park events, and other outreach efforts generates goodwill between park management and tenants and can often lead to increased collaborations between tenants and the park's affiliated laboratory. Parks with an active, on-site management most often have the highest degree of tenant satisfaction and the most steady absorption of property.

DEVELOPMENT ISSUES

Throughout the year-long Development Study, the team has sought to identify and analyze those issues, which are believed to pose a significant risk to the successful implementation of the Park.

Certain challenges to the development of the ISRP exist because of its unique location on Federal property. Some of these challenges will require policy decisions and some could benefit from regulatory changes. Most importantly, none of these challenges are insurmountable provided that the partners promptly and proactively address them. There are also unique benefits and opportunities that KSC and FSA can offer that potential tenants would not receive at other locations.

The *Development Issues Report* documents a list of 12 challenges grouped in the following categories:

- Legal/Regulatory,
- Financial, and
- Operational.

The team has recommended measures that can resolve or mitigate these issues. An attempt has been made to characterize the degree of risk to the project, possible mitigation measures, and both a raw (pre-mitigation) and final (post-mitigation) score for each issue. It appears at this time that the most challenging issues facing the ISRP are the limited available acreage for development on the proposed site and the potential application of traditional NASA management practices to what is essentially a commercial, market-driven endeavor.

Available Land for Development: The requirement for significant storm water retention on site, coupled with the existence of more extensive wetlands than originally anticipated, has decreased the available land for development to approximately 200 acres. This complicates the financial projections for the Park, since less "lease-able" land is available to offset the costs of infrastructure improvements, which do not necessarily scale in a linear fashion. While the Park developable acreage appears sufficient for a reasonable business model, consideration should be given to expansion opportunities south of the existing Park site as the project matures.

NASA Management Oversight Practices: For the land under its jurisdiction, NASA KSC has traditionally performed services normally provided by local governing authorities, such as police and fire protection, environmental permitting, land-development regulation, and building approval and permitting. These practices and policies may prove inadequate, cumbersome, costly, and unnecessarily constraining when applied to the concept envisioned for the ISRP, which relies on private financing and the use of commercial practices for facilities built and operated by non-government organizations. While NASA will retain ownership of ISRP lands, many of the functions traditionally performed through NASA and its support contractors could be transitioned to a municipality or other non-federal entity in a fee-for-service arrangement to facilitate Park management and operations efficiency. Failure to adapt to a new way of managing the development, construction, and ongoing operation of the Park will impede its progress, discourage much potential activity, and potentially jeopardize its success.